

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-22. (canceled)

23. (previously amended) A method of inhibiting tumor growth comprising identifying a mammal comprising an elevated level of an HAAH polypeptide compared to a normal nonneoplastic level of said polypeptide, said HAAH polypeptide comprising an amino acid sequence of SEQ ID NO:2, and administering to said mammal a compound which inhibits tyrosine phosphorylation of insulin receptor substrate-1 (IRS-1), said IRS-1 comprising an amino acid sequence of SEQ ID NO:5, wherein said compound is dominant negative IRS-1 mutant comprising a mutation in a carboxy-terminal SH2 binding motif of SEQ ID NO:5.

24-38. (canceled)

39. (previously amended) A method of inhibiting tumor growth in a mammal, comprising identifying a mammal comprising an elevated level of an HAAH polypeptide compared to a normal nonneoplastic level of said polypeptide, said HAAH polypeptide comprising an amino acid sequence of SEQ ID NO:2, and administering to said mammal a compound which inhibits tyrosine phosphorylation of insulin receptor substrate-1 (IRS-1), said IRS-1 comprising an amino acid sequence of SEQ ID NO:5, wherein said compound is a vitamin D analogue.

40. (previously amended) The method of claim 39, wherein said compound is EB1089.

41. (previously amended) A method of inhibiting tumor growth in a mammal, comprising identifying a mammal comprising an elevated level of an HAAH polypeptide compared to a normal nonneoplastic level of said polypeptide, said HAAH polypeptide comprising an amino acid sequence of SEQ ID NO:2, and administering to said mammal a compound which inhibits tyrosine phosphorylation of insulin receptor substrate-1 (IRS-1), said IRS-1 comprising an amino acid sequence of SEQ ID NO:5, wherein said compound is Wortmannin.

42. (canceled)

43. (canceled)

44. (previously amended) The method of claim 23, wherein said tumor is selected from the group consisting of colon cancer, breast cancer, pancreatic cancer, liver cancer, and cancer of the bile ducts.

45. (withdrawn) The method of claim 23, wherein said tumor is a cancer of the central nervous system.

46. (previously amended) The method of claim 23, wherein said tumor is a hepatocellular carcinoma.

47. (withdrawn) The method of claim 23, wherein said tumor is a cholangiocarcinoma.

48. (canceled)

49. (canceled)

50. (previously amended) The method of claim 23, wherein said mutant comprises a mutation at position 897 of SEQ ID NO:5.

51. (previously amended) The method of claim 23, wherein said mutant comprises a mutation at position 1180 of SEQ ID NO:5.

52. (withdrawn) The method of claim 23, wherein said tumor is a glioblastoma.

53. (withdrawn) The method of claim 23, wherein said tumor is a neuroblastoma.

54. (previously presented) The method of claim 23, wherein said mutant comprises a mutation at position 613 of SEQ ID NO:5.

55. (previously presented) The method of claim 23, wherein said mutant comprises a mutation at position 942 of SEQ ID NO:5.

56. (previously presented) The method of claim 23, wherein said mutant comprises a mutation at position 897 and 1180 of SEQ ID NO:5.

57. (previously presented) The method of claim 23, wherein said mutant comprises a mutation at position 613 and 942 of SEQ ID NO:5.